

IN THE CLAIMS

Cancel claims 1-5 without prejudice or disclaimer, and add new claims 6-13 as follows:

6. (New) A network relaying apparatus connected to a plurality of networks and outputting packets input from said networks, to the next transfer destination based on address information, comprising:

 a plurality of network interfaces connected to at least one of said networks and transmitting and receiving packets input to and from said at least one network, each packet being formed of a header and data;

 a plurality of routing processors connected to at least one of said plurality of network interfaces and routing input packets input from said network interface;

 a routing manager for managing internal components of the apparatus; and

 a connector for connecting said routing manager and each of a plurality of said routing processors;

 wherein each of said plurality of routing processors comprises:

a packet buffer for storing overall input packets;
a header memory accessible asynchronously with said
packet buffer and adapted for storing header information
including a header of input packet and an internal header;

a transfer engine which stores an input packet input
from said network interface to said packet buffer and stores
the header of the input packet and said internal header as
header information to said header memory, and generates an
output packet based on the input packet stored in said packet
buffer and the header information stored in said header
memory, and outputs the output packet to said connector or
said header memory; and

a search engine which searches destination
information based on the header information stored in said
header memory to extract destination information and writes
the extracted destination information into said header memory
as part of said internal header; and

when said internal header stored in said header
memory includes a plurality of destination information, said
transfer engine outputs said output packet to any or both of
said connector and said at least one network interface in

accordance with each of said plurality of destination information.

7. (New) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a plurality of output buffers corresponding to said at least one network interface and the other routing processors, respectively, and

 said transfer engine stores said output packet into at least one of output buffers corresponding to destinations indicated by said plurality of destination information among said plurality of output buffers.

8. (New) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a route memory for storing address information, and

 in response to inputting of a packet from said network interface, said search engine reads destination address from the header stored in said header memory out, searches said address information stored in said route memory using said destination information, and extracts said

plurality of destination information and writes the extracted destination information into said header memory as part of said internal header.

9. (New) A network relaying apparatus according to claim 6, wherein said connector transfers said output packet to said at least one of said plurality of routing processors based on said plurality of destination information contained in the internal header of said network output packet.

10. (New) A network relaying apparatus according to claim 6, wherein said connector is a crossbar switch.

11. (New) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a filter information memory which stores filter information, and

 said search engine reads the header information stored in said header memory out, searches said filter information memory using said header information to extract filter information, and writes the extracted filter

information into said header memory as part of said internal header.

12. (New) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a QoS information memory which stores QoS information, and

 said search engine reads the header information stored in said header memory out, searches said QoS information memory using said header information to extract QoS information, and writes the extracted QoS information into said header memory as part of said internal header.

13. (New) A network relaying apparatus according to claim 6, wherein said connector further comprises a plurality of queues for storing packets different in priority, and stores output packets into any of said plurality of queues based on said QoS information included in the internal header of said output packets and outputs said output packets in an order predetermined for each queue.